

CLAIMS

- 5 1. A color forming composition, comprising a mixture of:
- a) a color forming leuco dye;
 - b) a metal salt activator configured for reaction with the color forming leuco dye to form a colored dye;
 - c) a suppression agent configured for inhibition of reaction of the
 - 10 metal salt activator with the color forming leuco dye; and
 - d) an initiator precursor configured for forming an initiator which reacts with the suppression agent upon application of energy.
- 15 2. The composition of claim 1, wherein the metal salt activator is a metal salt of an aromatic carboxylic acid.
3. The composition of claim 1, wherein the metal salt activator is selected from the group consisting of zinc salicylate, zinc 3,5-di-t-butyl salicylate, tin salicylate, zinc 2-hydroxy naphthoate, 3,5-di- α -methylbenzyl zinc
- 20 salicylate, metal rhodanate, metal xanthate, metal aluminate, metal titanate, metal zirconate, and mixtures thereof.
4. The composition of claim 3, wherein the metal salt activator is zinc 3,5-di-t-butyl salicylate.
- 25 5. The composition of claim 1, wherein the suppression agent is a primary or secondary amine.
6. The composition of claim 1, wherein the suppression agent is selected
- 30 from the group consisting of 2-hydroxy-1-aminopropanol, butyl amine, valoneol, prolinol, 2-amino-3-phenyl-1-propanol, (R)-(-)-2-phenyl glycinol, 2-amino-

phenylethanol, 1-naphthylethyl amine, 1-aminonaphthalene, morpholin, and mixtures thereof.

7. The composition of claim 6, wherein the suppression agent is 2-
5 hydroxy-1-aminopropanol.

8. The composition of claim 6, wherein the suppression agent is butyl amine.

10 9. The composition of claim 1, wherein the suppression agent is a member selected from the group consisting of 1,3-diketones, diols, keto-esters, and mixtures thereof.

10. The composition of claim 1, wherein the initiator precursor comprises
15 a secondary activator protected by an initiator; and wherein the suppression agent further acts as a deprotecting agent and is configured for removing the initiator upon application of energy.

11. The composition of claim 10, wherein the secondary activator is a
20 member selected from the group consisting of phenols, carboxylic acids, cyclic sulfonamides, protonic acids, and mixtures thereof.

12. The composition of claim 11, wherein the secondary activator
compound is bis-(3-allyl-4-hydroxyphenyl)sulfone.

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13. The composition of claim 1, wherein the initiator precursor is a member selected from the group consisting of esters, sulfonates, phosphinates, carbonates, carbamates, and mixtures thereof.

14. The composition of claim 1, wherein the initiator precursor includes
30 an ester or anhydride functional group.

15. The composition of claim 1, wherein the initiator is an acyl.

16. The composition of claim 1, wherein the initiator is a silica gel.

5 17. The composition of claim 1, further comprising an infrared radiation absorber.

18. The composition of claim 1, wherein the color forming composition is spin-coatable.

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19. An optical disk, comprising an optical disk substrate having a color forming composition coated thereon, said color forming composition comprising:

- 15 a) a color forming leuco dye;
 b) a metal salt activator configured for reaction with the color forming leuco dye to form a colored dye;
 c) an amine suppression agent configured for inhibition of reaction of the metal salt activator with the color forming leuco dye; and
 d) an initiator precursor configured for forming an initiator upon application of energy.

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20. The optical disk of claim 19, wherein the metal salt activator is a metal salt of an aromatic carboxylic acid.

21. The optical disk of claim 20, wherein the metal salt activator is selected from the group consisting of zinc salicylate, zinc 3,5-di-t-butyl salicylate, tin salicylate, zinc 2-hydroxy naphthoate, 3,5-di- α -methylbenzyl zinc salicylate, metal rhodanate, metal xanthate, metal aluminate, metal titanate, metal zirconate, and mixtures thereof.

22. The optical disk of claim 21, wherein the metal salt activator is zinc 3,5-di-t-butyl salicylate.

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23. The optical disk of claim 19, wherein the suppression agent is a member selected from the group consisting of 2-hydroxy-1-aminopropanol, butyl amine, and mixtures thereof.

5 24. The optical disk of claim 19, wherein the initiator precursor comprises a secondary activator protected by the initiator; and wherein the suppression agent further acts as a deprotecting agent and is configured for removing the initiator upon application of energy.

10 25. The optical disk of claim 19, wherein the initiator precursor is a member selected from the group consisting of esters, sulfonates, phosphinates, carbonates, carbamates, and mixtures thereof.

15 26. The optical disk of claim 19, wherein the suppression agent is a member selected from the group consisting of valoneol, prolinol, 2-hydroxy-1-amino-propanol, 2-amino-3-phenyl-1-propanol, (R)-(-)-2-phenyl glycinol, 2-amino-phenylethanol, 1-naphthylethyl amine, 1-aminonaphthalene, morpholin, and mixtures thereof.

20 27. The optical disk of claim 19, wherein the color forming composition further comprises an infrared radiation absorber in thermal contact with the initiator precursor.

25 28. The optical disk of claim 19, wherein the color forming composition further comprises a binder.

 29. The optical disk of claim 19, wherein the color forming composition further comprises a non-leuco colorant.

30 30. A method of forming color images on a substrate, comprising:
a) applying a color forming composition onto a substrate, said color forming composition being a mixture including:

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- i) a color forming leuco dye;
 - ii) a metal salt activator configured for reaction with the color forming leuco dye to form a colored dye;
 - iii) a suppression agent configured for inhibition of reaction of the metal salt activator with the color forming leuco dye; and
 - iv) an initiator precursor configured for forming an initiator upon application of energy; and
- b) applying energy to the color forming composition sufficient to cause reaction of the metal salt activator with the leuco dye without decomposing the color forming composition.
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31. The method of claim 30, wherein the energy is applied at from about 0.3 to about 0.5 J/cm².

15 32. The method of claim 30, wherein the energy is applied at from about 0.3 to about 0.5 J/cm².

33. The method of claim 30, wherein the energy is applied for about 100 to about 500 microseconds.

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34. The method of claim 30, wherein the color forming composition further comprises an infrared radiation absorber admixed with or in thermal contact with the initiator precursor.

25 35. The method of claim 34, wherein the energy is applied using an infrared laser.

36. The method of claim 30, wherein the metal salt activator is a zinc salt of an aromatic carboxylic acid.

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37. The method of claim 30, wherein the suppression agent is selected from the group consisting of 2-hydroxy-1-aminopropanol, butyl amine, and mixtures thereof.

5 38. The method of claim 30, wherein the initiator precursor is a member selected from the group consisting of esters, sulfonates, phosphinates, carbonates, carbamates, and mixtures thereof.

10 39. The method of claim 30, wherein the substrate is an optical disk.

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